How to produce single MC tracks

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The program used to generate MC tracks is *starsim*.
You can use it under an rcas (just type **starsim**).
Then you have to enter a set of commands, that will define the geometry used, the tracks properties ,number of tracks per event, number of events,etc...
Following is an example (don't type the number at the beginning of each lines):

1. detp geometry y2007
2. make geometry
3. gClose all
4. make gstar
5. debug on
6. gfile o myfile.fzd
7. gvertex 0 0 0
8. gkine 300 8 0.1 5.0 -1.2 1.2 -3.1415 3.1415
9. trig 20
10. exit

1 explanations

- the 4 first lines define the geometry used , here it is for Au+Au collisions.
  The full list of geometries is at :
  http://drupal.star.bnl.gov/STAR/comp/prod/MCGeometry
  make gstar defines some particles Id
- the fifth line will print (on the screen) your final command
- the sixth line set the name of the file (.fzd) that you creates
- the seventh line set the vertex position : here the vertex is at **(0,0,0)**

- the eight line is the most important :
  1. the first number (**300**) is the number of tracks per event
  2. the second number (**8**) is the particle id corresponding to the track (here is at a π^+)
  3. the 2 next number (**0.1** and **5.0**) are the p_T range
  4. the 2 next number (**-1.2** and **1.2**) are the η range
  5. the 2 next number (**-3.1415** and **3.1415**) are the ϕ range
     (these 2 are optionnal, by default it is generated in **2**π)
- the next line is the number of event in the file you creates
- the last line is to quit **starsim** and write the .fzd file

Once you hace a .fzd file, you have to run the bfc chain to perform the reconstruction in STAR

2 Run the bfc chain

Now you have an input file, you have to do the reconstruction in STAR detector.
This is done using the bfc chain.
For the simulation, the chain I used is :
root4star -q -b bfc.C(1,20,"MakeEvent,trs,srs,ssd,fss,y2007,Idst,IAna,l0,tpcI,fcf,Tree,logger,ITTF,Sti,genvtx,
SvtIt,SsdIt,geant,evout,IdTruth,tags,bbcSim,tofsim,emcY2,EEfs,-GeantOut,big,-dstout,
-McEvout,fzin,StarMagField,MiniMcMk,McAss,McAna","myfile.fzd")

2.1 Brief explanations

- the 2 first number set the first and last event
- there are a lot of options : the more important is to be sure that the reconstruction is done in SSD (**option ssd**) and SVT (**option srs**)
- you have to use the same geometry flag (here **y2007**)
- the tracking is done in silicon detectors with the options **SsdIt** and **SvtIt**
- you can find all the options at :
  http://www.star.bnl.gov/cgi-bin/protected/cvsweb.cgi/ checkout /StRoot/StBFChain/doc/index.html
- These chain is from the "official" chain used by Lidia, according to a specific production :
  http://www.star.bnl.gov/devcgi/dbProdOptionRetrv.pl
- the last member is your input file